bel canto

e.One™ series

REF1000M

USER'S GUIDE

REF1000M

MONO AUDIO POWER AMPLIFIER

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Bel Canto Design Limited
221 North 1st Street
Minneapolis, MN 55401
United States

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Important Safety Instructions

Explanation of symbols used in this manual or on the rear/underside of the apparatus:

The Lightning Flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

TO COMPLETELY DISCONNECT THIS APPARATUS FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE.

THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY ACCESSIBLE.

Disconnect supply cord before changing fuse.
Refer servicing to qualified service personnel.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.

- Read, keep and follow these instructions.
- Heed all warnings.
- Do not use the apparatus near water, ie near a bathtub, kitchen sink, laundry tub, in a wet basement, near a swimming pool etc.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the Manufacturer's instructions. Site the apparatus so that its location or position does not interfere with its proper ventilation. For example, the apparatus should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
- Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet; consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and at the point where they exit from the apparatus.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug has been damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Mains plug: Use the mains plug to disconnect the apparatus from the mains supply. The mains plug must be accessible at all times. Use the mains switch (if applicable) when the apparatus is not in use.
- Objects and liquid entry: Do not let objects or liquids fall into the apparatus. Do not expose the apparatus to dripping or splashing. Do not place a vessel containing liquid on top of the apparatus.
- No naked flame sources, such as lighted candles, should be placed on the apparatus.
- The apparatus has been designed for use in moderate and tropical climates

In The U.K.

Fuse replacement:

This appliance is fitted with a non-rewireable 10 amp mains plug. The plug contains a 10 amp fuse. If the fuse has blown it can be replaced as follows:
a) Pull out the black fuse cover/carrier.
b) Remove and dispose of the blown fuse.
c) Fit a new 10 amp BS1362 approved fuse into the carrier and push the carrier back into the plug.

Always ensure the fuse cover is fitted. If the fuse cover is missing do not use the plug. Contact your Bel Canto retailer to obtain a replacement fuse cover. Fuses are for fire protection and do not protect against electric shock.

WARNING: THIS APPLIANCE MUST BE GROUNDED.

FCC NOTICE

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Green By Design

All Bel Canto products make use of compact and efficient design principles. Our products use less resources per unit to produce better performance than ever before. Everything from reduced packaging volume, to less weight in transport helps to reduce the overall environmental impact of bringing our products into the market.

Our products make very efficient use of electricity. Low energy usage and compact size ensure that the physical and environmental footprints of all Bel Canto products are minimized. Quality and performance play into this approach as all of our products are designed to remain vital and valid performers for many years. Should you want to upgrade to one of our new products, we even offer trade-in value for your old Bel Canto product to ensure that it is recycled in the most efficient and responsible manner.

RoHS and WEEE

All of our current products are designed and produced to RoHS standards, ensuring that dangerous materials do not enter the waste stream. Lead free electronics assemblies and environmentally safe finishing and production methods are utilized to ensure that our products and processes are environmentally safe.

Bel Canto Recycles

Bel Canto has always been a forward thinking company. In the same way that we are focused on the development of high-end audio products, we are also conscious of what we leave behind. For many years we have implemented environmentally sound measures to make the most efficient use of resources and keep our impact at a minimum.

We reuse or recycle more than 99% of the packing materials for our incoming parts shipments. Each year we divert massive amounts of cardboard, paper, plastic film, and Styrofoam from landfills. Our plastic and Styrofoam is delivered directly to local facilities that process it on site for use in their manufacturing. Steel, aluminum, and other metal waste products are delivered to local metal scrap yards for recycling back into the production stream.

We also participate in Waste Management's e-Cycling program. All electronic waste is processed in the US, with hazardous material being separated from non-hazardous, at ISO 9001 and ISO 14001 certified regional processing centers.

Our commitment to responsible production processes ensures that the absolute minimum of material used in the making of our products enters the waste stream.

Warranty Information

Bel Canto products are automatically covered by a 90 day factory warranty that covers all internal parts and labor. Register online (http://www.belcantodesign.com/Belcanto_Warranty.html) within 30 days of purchase from an authorized dealer to automatically extend your warranty for 2 years starting from the date of purchase. If you do not have web access, please contact your dealer for assistance. Upon fully completing registration, within 5 business days you will receive an email that officially validates your warranty. Your information will be used for internal use only and will not be sold or released outside Bel Canto. Your comments and suggestions are appreciated and help us continually improve our products and services.

The warranty is only valid to the original owner and is non-transferable. Damage caused by unauthorized modification, abuse, or neglect of product will void your warranty. Any cost associated with return of product is the sole responsibility of the owner. All returns require a return authorization number issued after completing the RMA form in the support section of our website. If you have any questions, please feel free to contact us online at info@belcantodesign.com.

Unpacking Your REF1000M

REF1000M packaging contains the following:

1 (one) – REF1000M Amplifier
1 (one) – REF1000M User's Guide
1 (one) – Power cord [6.6' – 2 meters long]

Carefully unpack each piece and check for shipping damage. If there is any damage, or if anything is missing, please contact your dealer, distributor or Bel Canto Design.

IMPORTANT!
Save all packing materials! They are custom designed to protect the unit during transportation or shipping. If the packing becomes lost or damaged, please contact your dealer or Bel Canto before attempting to transport your unit.

Power Connection

The power supply on the REF1000M is preset for the proper power voltage. The power cable should have the correct plug for your local power system. If you believe this to not be true, please contact your dealer immediately.

This product, like any electrical component, can be dangerous and cause injury unless correct handling procedures are observed and used. Before powering this product, it is necessary to read and follow proper setup and procedures.

WARNING!
Do not connect power to this product yet!

Setup & Placement

Because the REF1000M runs cool, it can be placed in many system locations without compromise. We do not recommend placing weights or other objects directly on the REF1000M. This may scratch or mar the chassis finish. Do not use harsh chemicals when cleaning the outside of your REF1000M.

IMPORTANT!
Make all connections before powering your unit!

Design Features

The e.One Series REF1000M is a mono audio amplifier designed to deliver over 500 watts into 8 ohm loads and 1000 watts into 4 ohm loads. The REF1000M has current drive capability for virtually any loudspeaker load down to 2 ohms. This is achieved in a compact and elegant product through our adaptation of the latest analog switching amplifier and power supply technology from the ICEpower group.

Bel Canto's new generation of e.One analog switching audio power amplifiers extend our leadership in this technology. These amplifiers incorporate performance enhancing technologies that bring musicality and performance to new levels.

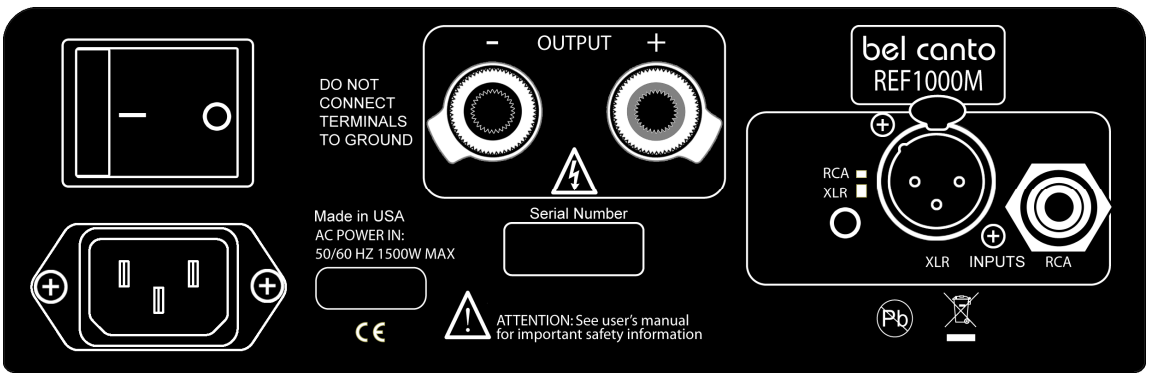
REF1000M Features:

- A custom input stage is added for increased linearity, common mode rejection and improved input stage drive to the amplifier. This circuit results in lower noise in real-world operation, lower distortion and better dynamic performance for the amplifier.
- This input stage uses the latest advanced amplifiers and passive components including: Caddock resistors, Solid Electrolytic ultra-low ESR decoupling capacitors and low noise regulated power supplies. These devices ensure that the input section is utterly transparent, enhancing the performance of the core amplifier.
- The REF1000M and REF500M Mono amplifiers also include custom power supply rectification and filters that add 45 Joules of energy storage to the power supply. This stage results in lower noise in operation, reduced sensitivity to power line effects and better perceived power delivery and dynamics. Incorporating high speed, low noise rectifiers, high voltage film filter capacitors and high energy storage. This filter allows the regulated power supply to perform at its best.

CONDITIONING

The REF1000M's sonic performance will start to stabilize after approximately forty (40) hours of continuous power up. We recommend that the REF1000M remains powered for optimal performance.

Rear Panel Connections



Never Connect Either the Positive or Negative Speaker Output to Any Ground Contact!

Connecting any Speaker Output on the REF1000M to Ground will cause the amplifier to go into protection and could damage the amplifier and void the warranty.

1) Power Switch: Power is on when the switch is toggled to the I position and off in the O position.

2) Input Connections and RCA/XLR switch: When using RCA cables for the input insure that the RCA/XLR switch is pressed in to the RCA position. When using XLR cables insure that the switch is out in the XLR position. **Do not connect both XLR and RCA cables to the inputs!**

3) Output Connections: Attach your loudspeaker to the output connectors. Be sure that the polarity of each speaker is correct and the same so that no phase inversion can occur.

4) IEC power cord jack: Connect a heavy gauge power cord from this jack to the wall power supply. Note the power setting indicated on the back of the amplifier before connecting the power.

Double-check all connections to and from the amplifier. Power on the preamplifier in your system, activate its Mute setting and then power on the REF1000M.

Tips For Operation

- In case there is hum or ground noise, check that the RCA/XLR switch is in the correct position for the type of connection being used.

- Ensure that the preamplifier or any source components are not producing hum by setting the preamplifier to a MUTE or Standby setting.

- The design of the REF1000M reduces the chance for ground loop induced hum, but we still recommend using shorter interconnect cables to the preamplifier. Connect all power cables to a common outlet box or power conditioner unit to reduce the possibility for ground current noise being induced into the audio signal path.

- If you choose to power your source and preamplifier components from a different AC supply than used for the REF1000M amplifiers, we recommend that you use a high quality balanced XLR cable driven from a true balanced XLR preamplifier output.

- **We do not recommend** that you resort to 'cheater plugs' or some other means to disconnect the power ground from the REF1000M as this may lead to dangerous operation and void the warranty.

- The small blue LED lamp indicates that power is connected to the REF1000M and that the power switch is in the ON position. If the amplifier detects a fault or short circuit in the output connections then it will go into a protection mode and stop playing. If this occurs toggle the power switch to the OFF position and check the speaker cabling to ensure that no speaker output is either shorted together or connected to a ground. When you are certain that the loudspeaker cabling is correct, power the unit ON again, check that the blue LED is lit and that music will play.

- There is an internal fuse protection on the REF1000M. If the power switch is in the ON position, the power cable is connected to a functioning power outlet at the correct voltage and the blue LED is not lit, this indicates that the internal fuse may have blown. If this occurs contact your dealer, distributor or Bel Canto for service. There are no user replaceable fuses or other parts. Opening the chassis will void your warranty.

Specifications

Power Output:	>1000W into 4 ohms, >500W into 8 ohms
Minimum Load:	2 ohms
Peak Output Current:	45 amperes
Frequency Response:	+/-0.5dB 20Hz-20KHz, all loads
THD+N:	0.007% 1W, 1KHz, 4 ohms
IMD (CCIF):	0.0007%, 1W, 14:15KHz, 4 ohms
Output noise:	90uVRMS A-weighted 10Hz-20KHz
Voltage gain:	27dB (single ended or balanced input)
Damping factor:	>1000
Output Impedance at 100Hz:	<8 milliohms
Dynamic Range:	120dB
Input Voltage for Max Output:	3Vrms
Input connections:	Single-ended RCA or balanced XLR
RCA input impedance:	100Kohms
Balanced input impedance:	200Kohms
Output connections:	1-set WBT 5-way safety binding posts
Power On usage:	15W
Power Off usage:	0.0W
Internally Set Operating Voltages:	100-120VAC or 230-240VAC 50/60 Hz
Size:	8.5 x 3.5 x 12[inches], 216 x 88 x 305[mm]
(WxHxD)	
Weight:	18.5 lbs. 9 Kg.

Features and specifications are subject to improvements and changes without prior notice.

Declaration Of Conformity

Application of Council Directive(s):
2004/108/EC and 2006/95/EC, as amended

Standard(s) to Which Conformity Is Declared:
EN 55013:2001 + A1:2003 + A2:2006
EN 55020:2007
EN 61000-3-2:2006
EN 61000-3-3:1995 + A1:2001 + A2:2005
EN 60065:2002/A12:2011

Manufacturer:
Bel Canto Design, Ltd.
221 1st Street North
Minneapolis, MN 55401 USA

The equipment identified here conforms to the Directive(s) and Standard(s) specified above.

Type of Equipment: Audio Amplifier
Models: REF1000M
Date: January, 2012

Bel Canto Design, Ltd.
221 1st Street North
Minneapolis, MN 55401 USA
Tel: 612-317-4550
Fax: 612-359-9358

Bel Canto Design, LTD
221 First Street North, Suite 300
Minneapolis, MN 55401
Phone : 612.317.4550 Fax : 612.359.9358
www.belcantodesign.com
info@belcantodesign.com
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